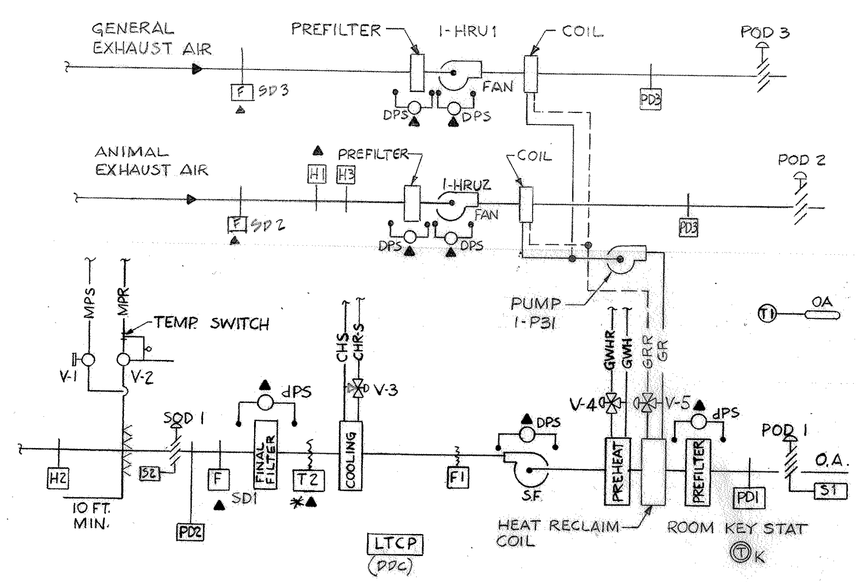


MEDIUM PRESSURE , CONSTANT VOLUME 100% O.A. SYSTEM
I-AC-2 & 1-HRU-1&2

OPERATING SEQUENCE

1. SYSTEM OPERATION IS STARTED FROM THE ECC AND RUNS CONTINUOUSLY. SYSTEM CAN BE STOPPED FROM THE ECC. WHEN STARTED, POD1 AND SOD1 OPEN. WHEN END SWITCHES S1 AND S2 ARE ENGAGED, SF AND FAN (1-HRU2) START, AND POD2 OPENS. WHEN STOPPED, SF AND FAN (1-HRU) STOP, AND POD2 CLOSES. AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES), POD1 AND SOD1 CLOSE. COMMANDS FROM ECC ARE ALL VIA DDC PANEL.
2. HRU1 IS STARTED FROM THE ECC AND RUNS CONTINUOUSLY. WHEN STARTED, POD3 OPENS. WHEN STOPPED, POD3 CLOSES.
3. DURING OPERATION, T-2 MODULATES V-4 AND V-5 IN SEQUENCE TO MAINTAIN 57°F. (HTG)
4. DURING OPERATION, T-2 MODULATES V-3 TO MAINTAIN 57°F. (SEE SUPPLY AIR TEMPERATURE RESET BELOW.) (COOLING)
5. T-1 CLOSES V-4 TO COIL (AT 50°F.).
6. V-5 SHALL BE CLOSED TO FLOW THROUGH COIL BETWEEN 57°F. AND 78°F. O.A. PUMP 1-P31 IS OFF. ABOVE 78°F., V-5 SHALL OPEN TO FLOW THROUGH COIL. (ADJUST IN DDC PANEL SOFTWARE)
7. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°.

STARTING AND STOPPING

1. WHEN SYSTEM OPERATION IS STARTED FROM ECC, PRESSURE SWITCH PD1 STOPS SUPPLY FAN SHOULD O.A. PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH PD2 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G. PRESSURE SWITCH PD3 STOPS FAN SHOULD PRESSURE RISE ABOVE 3" W.G. PRESSURE SWITCH SHALL BE MANUAL RESETTABLE TYPE.

HUMIDITY CONTROL

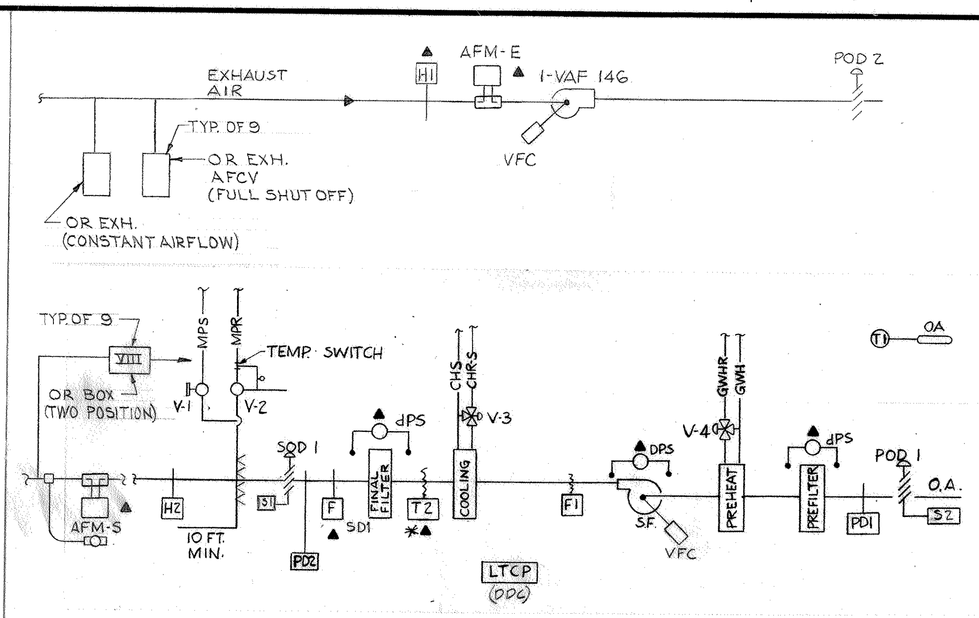
1. O.A. THERMOSTAT T1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F., AND OPEN VALVE V1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
2. EXHAUST HUMIDITY SENSOR H1 SHALL MODULATE VALVE V2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30% RH IN ROOM) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H2 SET AT 80% RELATIVE HUMIDITY. VALVE V2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROACHES STEAM TEMPERATURE.

SMOKE CONTROL

1. WHEN SMOKE IS SENSED AT SD1, SF STOPS, POD1 AND SOD1 CLOSE. 1 HRU2 RUNS.
2. WHEN SMOKE IS SENSED AT SD2, 1-HRU2 STOPS, POD2 CLOSES.
3. WHEN SMOKE IS SENSED AT SD3, 1-HRU1 STOPS, POD3 CLOSES.

SUPPLY AIR TEMPERATURE RESET

1. KEY ROOMSTAT OR EXHAUST AIR HUMIDISTAT H-3, SET AT 60% RH WITH GREATEST COOLING DEMAND RESETS T-2 TO MINIMUM TEMPERATURE.
2. KEY ZONES ARE INDICATED ON DRAWINGS.



SURGICAL MEDIUM PRESSURE, CONSTANT VOLUME 100% O. A. SYSTEM
1-AC-32 1-VAF 146

OPERATING SEQUENCE

1. SYSTEM IS STARTED AND STOPPED FROM THE ECC. WHEN STARTED, POD1 AND SOD1 OPEN. WHEN END SWITCHES S1 AND S2 ARE ENGAGED, SF AND FAN 1-VAF146 START, AND POD2 OPENS. WHEN STOPPED, SF AND FAN 1-VAF146 STOP, POD2 CLOSES, AND AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES) POD1 AND SOD1 CLOSE. COMMANDS FROM EEC ARE VIA DDC PANEL.
2. DURING OPERATION T-2 MODULATES V-4 IN SEQUENCE TO MAINTAIN 51°F.
3. DURING OPERATION, T-2 MODULATES V-3 TO MAINTAIN 51°F.
4. DURING OPERATION WHEN O-A AT T-1 IS ABOVE 55°F., T-1 CLOSES V-4 TO COIL.
5. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°.

STARTING AND STOPPING

1. WHEN SYSTEM OPERATION IS STARTED FROM ECC, PRESSURE SWITCH PD1 STOPS SUPPLY FAN SHOULD O.A. PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH PD2 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G. PRESSURE SWITCH SHALL BE MANUAL RESETTABLE TYPE.

HUMIDITY CONTROL

1. O.A. THERMOSTAT T1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F., AND OPEN VALVE V1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
2. DUCT HUMIDITY SENSOR H1 SHALL MODULATE VALVE V2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30° RH) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H2 SET AT 85% RELATIVE HUMIDITY. VALVE V2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROACHES STEAM TEMPERATURE.

SMOKE CONTROL

1. WHEN SMOKE IS SENSED AT SD1, SF STOPS, POD1 AND SOD1 CLOSE. FAN VAF146 RUNS.

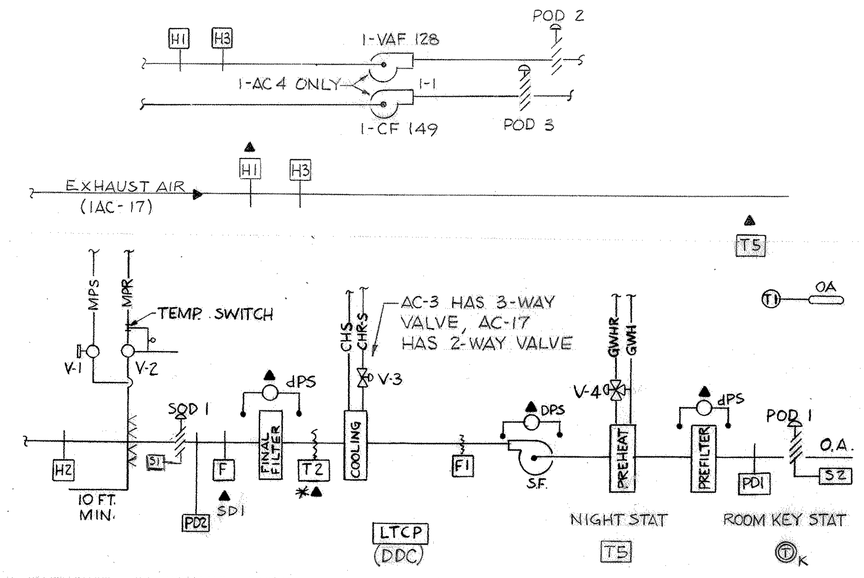
FAN CAPACITY CONTROL - SEE DRAWING 1-H93

OCCUPIED-UNOCCUPIED MODES

1. SYSTEM MODE IS CONTROLLED BY ECC PROGRAM AS FOLLOWS ON OCCUPIED MODE, SYSTEM OPERATES AS INDICATED ABOVE.
2. OCCUPIED CONTROL IS 0600 TO 1800 EXCEPT WEEKENDS.
3. ON UNOCCUPIED CONTROL TERMINAL SUPPLY BOXES FOR THE OPERATING ROOMS SHALL BE REDUCED TO INDICATED AIR QUANTITIES. THE EXHAUST FOR THE OPERATING ROOM WILL ALSO BE REDUCED BY SHUTTING OFF ONE OF THE AIR FLOW CONTROL VALVES. AIR FLOWS FOR THE OPERATING ROOMS ARE AS FOLLOWS:

		OCCUPIED SUPPLY	UNOCCUPIED SUPPLY	OCCUPIED EXH	UNOCCUPIED EXH
GEN. O.R.	5D100	1250	500	1050	450
GEN. O.R.	5D101	1430	575	1175	525
GEN. O.R.	5D103	1430	575	1175	525
GEN. O.R.	5D104	1430	575	1175	525
ORTHO. O.R.	5D105	1480	600	1225	525
AMB. O.R.	5D109	1140	460	1050	400
AMB. O.R.	5D110	1140	460	1050	400
CYSTO.	5D121	1230	500	1000	400
CYSTO.	5D123	1230	500	1000	400

4. DURING THE UNOCCUPIED PERIOD, SUPPLY AND EXHAUST TO ALL OF THE REMAINING AREAS SERVED BY 1-AC32 SHALL BE SAME AS DURING OCCUPIED CYCLE.
5. IN ADDITION, DURING THE OCCUPIED CYCLE ANY INDIVIDUAL OPERATING ROOM MAY BE INDEXED TO UNOCCUPIED AT THE ADJUSTMENT PANEL LOCATED IN THE OPERATING ROOM, AT THE MASTER ADJUSTMENT PANEL IN THE NURSING STATION, OR AT THE ECC.



MEDIUM PRESSURE, CONSTANT VOLUME 100% O.A. SYSTEM
1-AC-4 &1-AC-17

OPERATING SEQUENCE

1. SYSTEM OPERATION IS STARTED AND STOPPED FROM THE ECC. WHEN STARTED, POD1 AND SOD1 OPEN. WHEN END SWITCHES S1 AND S2 ARE ENGAGED, SF STARTS. WHEN STOPPED, SF STOPS AND AFTER 2-MINUTE DELAY (ADJUSTABLE 0-5 MINUTES), POD1 AND SOD1 CLOSE. WHEN 1-AC4 STARTS, FANS VAF128 AND CF149 START, POD2 AND POD3 OPEN. WHEN 1-AC4 STOPS, FANS VAF128 AND CF149 STOP, POD2 AND POD3 CLOSE. COMMANDS FROM ECC ARE VIA DDC PANEL.
2. DURING OPERATION, T-2 MODULATES V-4 IN SEQUENCE TO MAINTAIN 54°F.
3. DURING OPERATION, T-2 MODULATES V-3 TO MAINTAIN 54°F. (SEE SUPPLY AIR TEMPERATURE RESET BELOW.)
4. DURING OPERATION WHEN O-A AT T-1 IS ABOVE 55°F., T-1 CLOSES V-4 TO COIL.
5. ELECTRIC FREEZESTAT F1 STOPS SF WHENEVER TEMPERATURE IS BELOW 36°.

STARTING AND STOPPING

1. WHEN SYSTEM OPERATION IS STARTED FROM ECC, PRESSURE SWITCH PD1 STOPS SUPPLY FAN SHOULD O.A. PLENUM PRESSURE FALL BELOW MINUS 2" W.G. PRESSURE SWITCH PD2 STOPS SF SHOULD PRESSURE RISE ABOVE 4" W.G. PRESSURE SWITCHES SHALL BE MANUAL RESETTABLE TYPE.

HUMIDITY CONTROL

1. O.A. THERMOSTAT T1 SHALL CLOSE ON-OFF TWO-WAY CONTROL VALVE V-1 WHEN OUTSIDE AIR RISES ABOVE 70°F., AND OPEN VALVE V1 WHEN OUTSIDE AIR DROPS BELOW 70°F.
2. DUCT HUMIDITY SENSOR H1 SHALL MODULATE VALVE V2 TO MAINTAIN THE DESIRED RELATIVE HUMIDITY (30% RH) SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDITY SENSOR H2 SET AT 80% RELATIVE HUMIDITY. VALVE V2 SHALL CLOSE WHENEVER SUPPLY FAN IS OFF. VALVE V2 SHALL BE INTERLOCKED WITH TEMPERATURE SWITCH TO KEEP HUMIDIFIER OFF UNTIL CONDENSATE APPROACHES STEAM TEMPERATURE.

SMOKE CONTROL

1. WHEN SMOKE IS SENSED AT SD1, SF STOPS, POD1 AND SOD1 CLOSE. FANS VAF128 AND CF149 RUN.

OCCUPIED-UNOCCUPIED MODES

1. SYSTEM MODE IS CONTROLLED BY ECC PROGRAM TIMER AS FOLLOWS. ON OCCUPIED MODE, SYSTEM OPERATES AS INDICATED ABOVE. ON UNOCCUPIED MODE, SYSTEM IS STOPPED AND WHEN O.A. AT T1 IS BELOW 50°F., NIGHT STAT T-5 CYCLES SYSTEM TO MAINTAIN 70°F.
2. OCCUPIED MODE TO BE DETERMINED.
3. THREE-POSITION SWITCH S1 (OCCUPIED-UNOCCUPIED-AUTOMATIC) AT LTCP PERMITS MANUAL TIMER OVERRIDER.

SUPPLY AIR TEMPERATURE (OCCUPIED CYCLE)

1. KEY ROOMSTAT OR EXHAUST AIR HUMIDISTAT H-3, SET AT 60% RH WITH GREATEST COOLING DEMAND, RESETS T-2 TO MINIMUM TEMPERATURE.
2. KEY ZONES ARE INDICATED ON DRAWINGS.

8-0-1-1350

Revisions	Date
"AS BUILT"	6-17-94

RECORD DRAWING
CORRECTED ON BASIS OF DATA
FURNISHED BY THE RESIDENT ENGINEER

Key Plan

Seal

RTKL/CS&D/HENRY ADAMS (J.V.)
ARCHITECTS AND ENGINEERS
400 E. PRATT STREET
BALTIMORE, MD 21202

Drawing Title: CONTROL DIAGRAMS HVAC

Project Title: 324-BED REPLACEMENT HOSPITAL-PHASE II

Approved Project Director: J Albert Miller

Building Number: 1 | Checked | Drawn

Location: VAMC-BALTIMORE, MD

Date: 9/1/88

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DRAWING NO.: 1-H90

Dwg. 117 Of 123

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